

Data Filtering and Assimilation of Satellite Derived Aerosol Optical Depth, Phase II

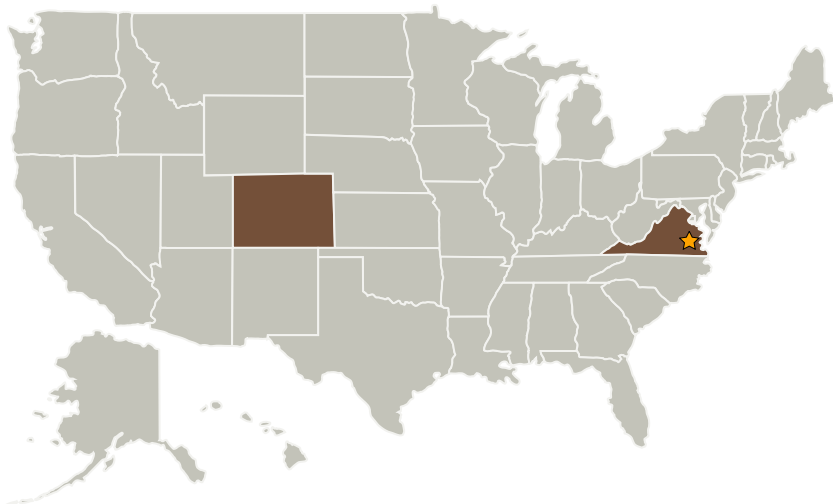
Completed Technology Project (2009 - 2011)



Project Introduction

Satellite observations of the Earth often contain excessive noise and extensive data voids. Aerosol measurements, for instance, are obscured and contaminated by clouds, possible only on the sunlit side of the globe, and difficult over bright land areas. We propose to extend filtering and data assimilation techniques for satellite derived aerosol optical depth based on the wavelet transform. The assimilation system is based on the Model for Atmospheric Transport and Chemistry (MATCH) and include improvements such as the incorporation of satellite observed aerosol size modes and column water vapor. Initially we will focus specifically on aerosol measurements from the Moderate Resolution Imaging Spectroradiometer (MODIS) instruments flying on the Terra and Aqua satellites. The assimilated fields will be tested against surface network observations of aerosol optical depth. We will employ the assimilation system to produce aerosol datasets for application in Earth radiation budget observations and atmospheric correction methods.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Langley Research Center (LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Tech-X Corporation	Supporting Organization	Industry	Boulder, Colorado



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Colorado

Virginia

Project Transitions



December 2009: Project Start



December 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.4 Information Processing
 - └ TX11.4.1 Science, Engineering, and Mission Data Lifecycle